Development of an Integral Field Spectrograph to Advance High Contrast Imaging Technologies

Completed Technology Project (2012 - 2013)

Project Introduction

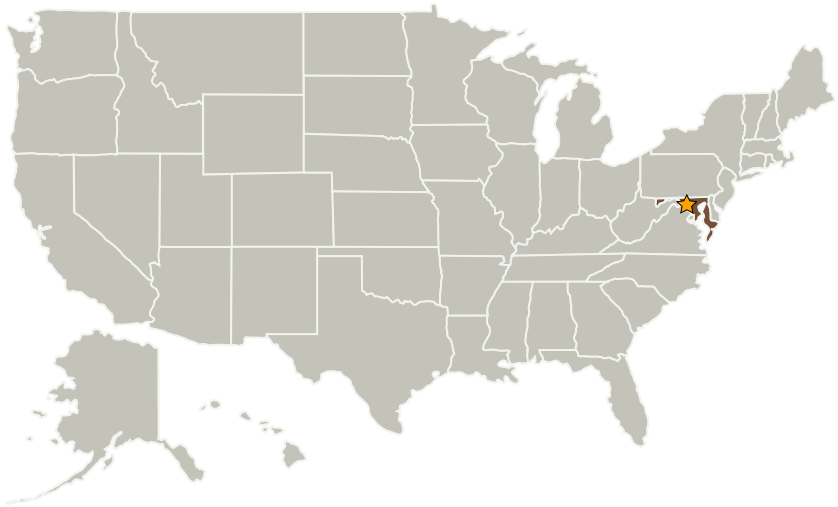
We propose to design a high performance laboratory Goddard IFS that can be couple with the ExEP HCIT. This work will produce 1) a baseline design for the IFS, 2) a realistic budget and schedule for the instrument development, (3)laboratory tests of a lenslet array similar to the one that will be used in the system, and 4) a winning TDEM to support the development of this instrument concept.

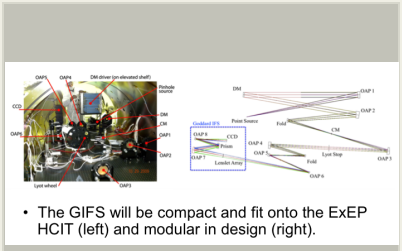
There are several key parameters that will be studied through simulation, including 1) controlling spatial and spectral crosstalk on the detector, determining the proper spectral resolution and bandpass to meet both science and speckle removal constraints, 3) characterizing the instrument throughput and the required source brightness at the ExEP HCIT, 4) designing a compact system that will fit above the ExEP HCIT bench, and 5) investigating calibration techniques for the data cube properties. We will 1) design a specialized lenslet array for high contrast imaging that reduces scattered light and 2) design a compact IFS that will fit within the HCIT vacuum chamber

Anticipated Benefits

N/A

Primary U.S. Work Locations and Key Partners





Project Image Development of an Integral Field Spectrograph to Advance High Contrast Imaging Technologies

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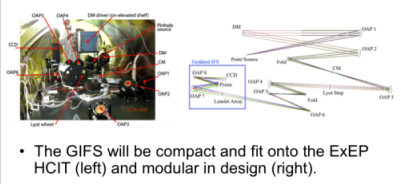
Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations
Maryland

Images



5130.png
Project Image Development of an Integral Field Spectrograph to Advance High Contrast Imaging Technologies
(https://techport.nasa.gov/image/1287)

Project Website:

http://sciences.gsfc.nasa.gov/sed/

Organizational Responsibility

Responsible Mission Directorate:

Mission Support Directorate (MSD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Center Independent Research & Development: GSFC IRAD

Project Management

Program Manager:

Peter M Hughes

Project Manager:

Stanley D Hunter

Principal Investigator:

Michael W Mcelwain

Co-Investigators:

Karl R Stapelfeldt
Sara R Heap
Bruce E Woodgate
Jeffrey W Kruk
Qian Gong

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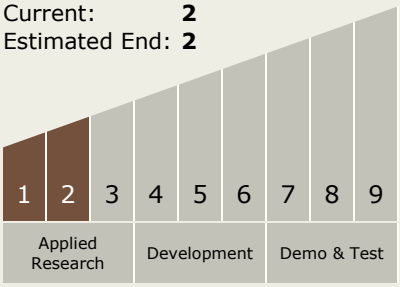
Completed Technology Project (2012 - 2013)

Technology Maturity (TRL)

Start: **1**
Current: **2**
Estimated End: **2**



Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.1 Detectors and Focal Planes